

FIG. 1

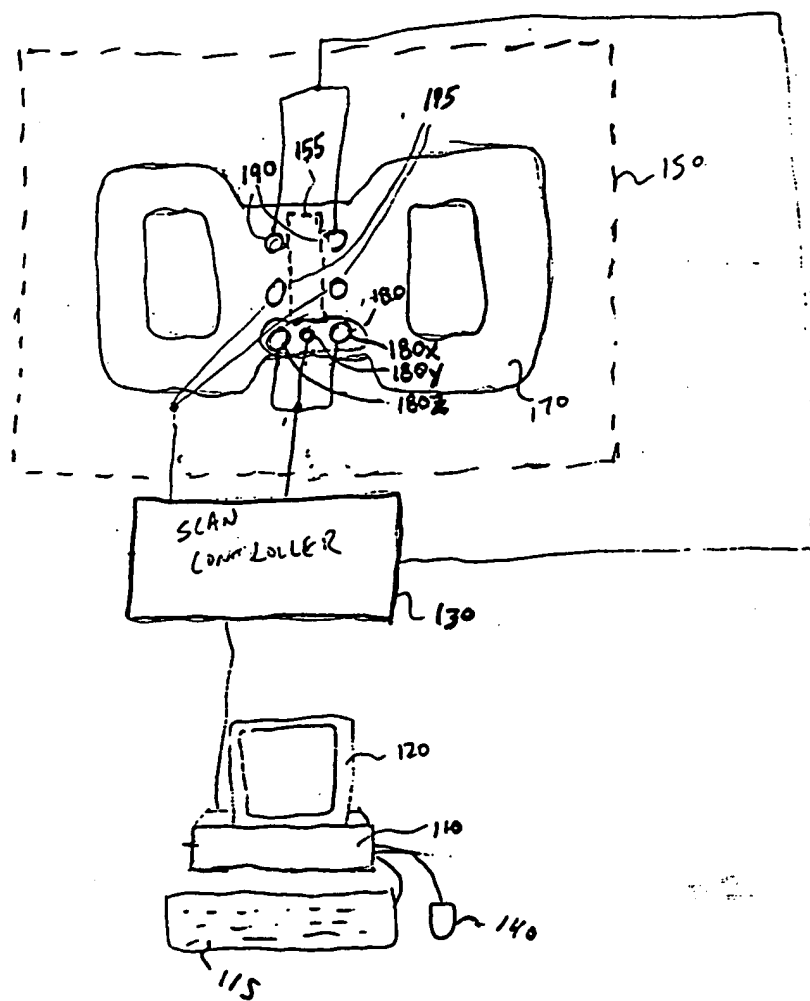


FIG. 1

Boundaries as indicated by [215] in Fig. 1

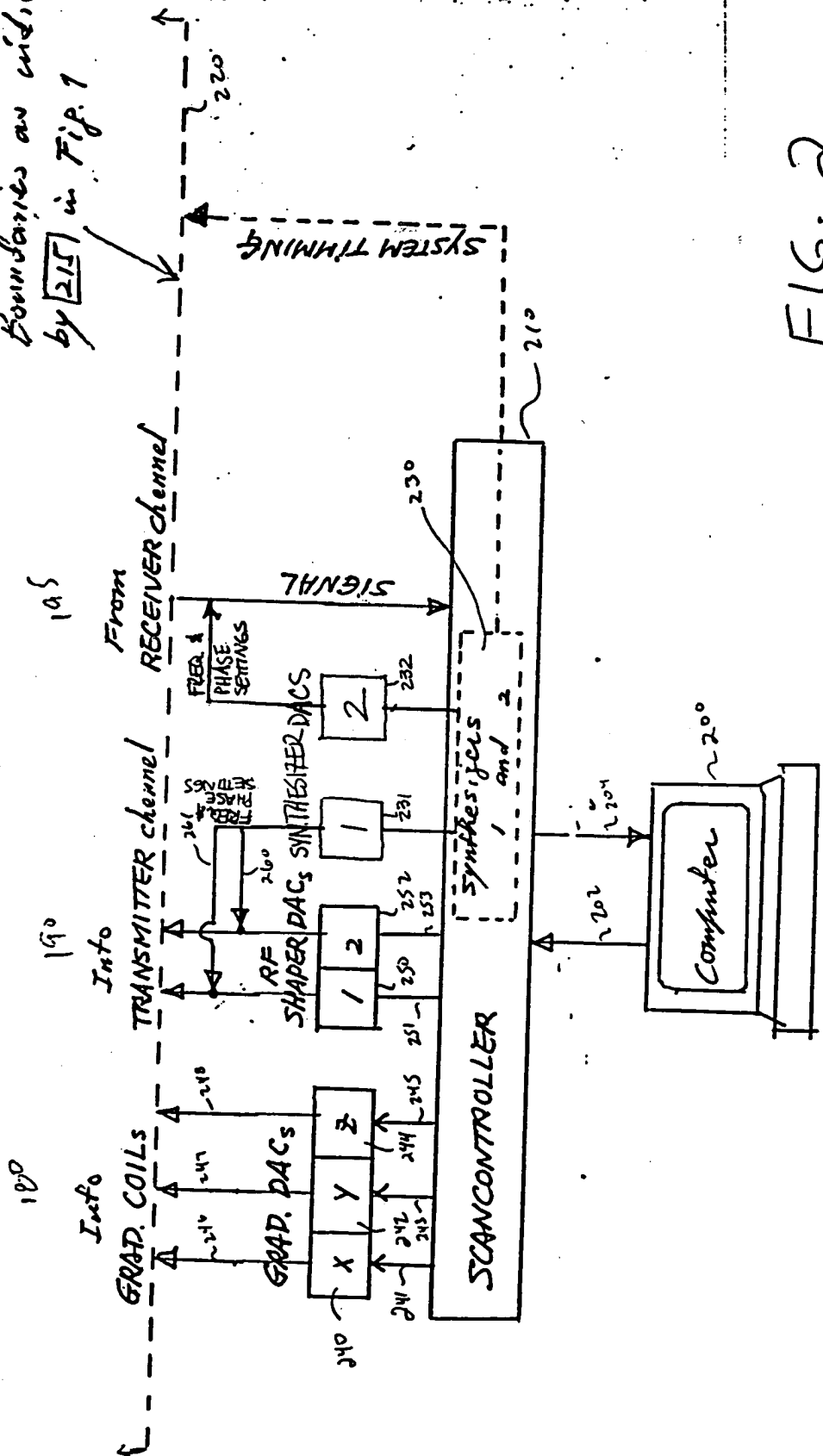


FIG. 2

~ 300

~ 305

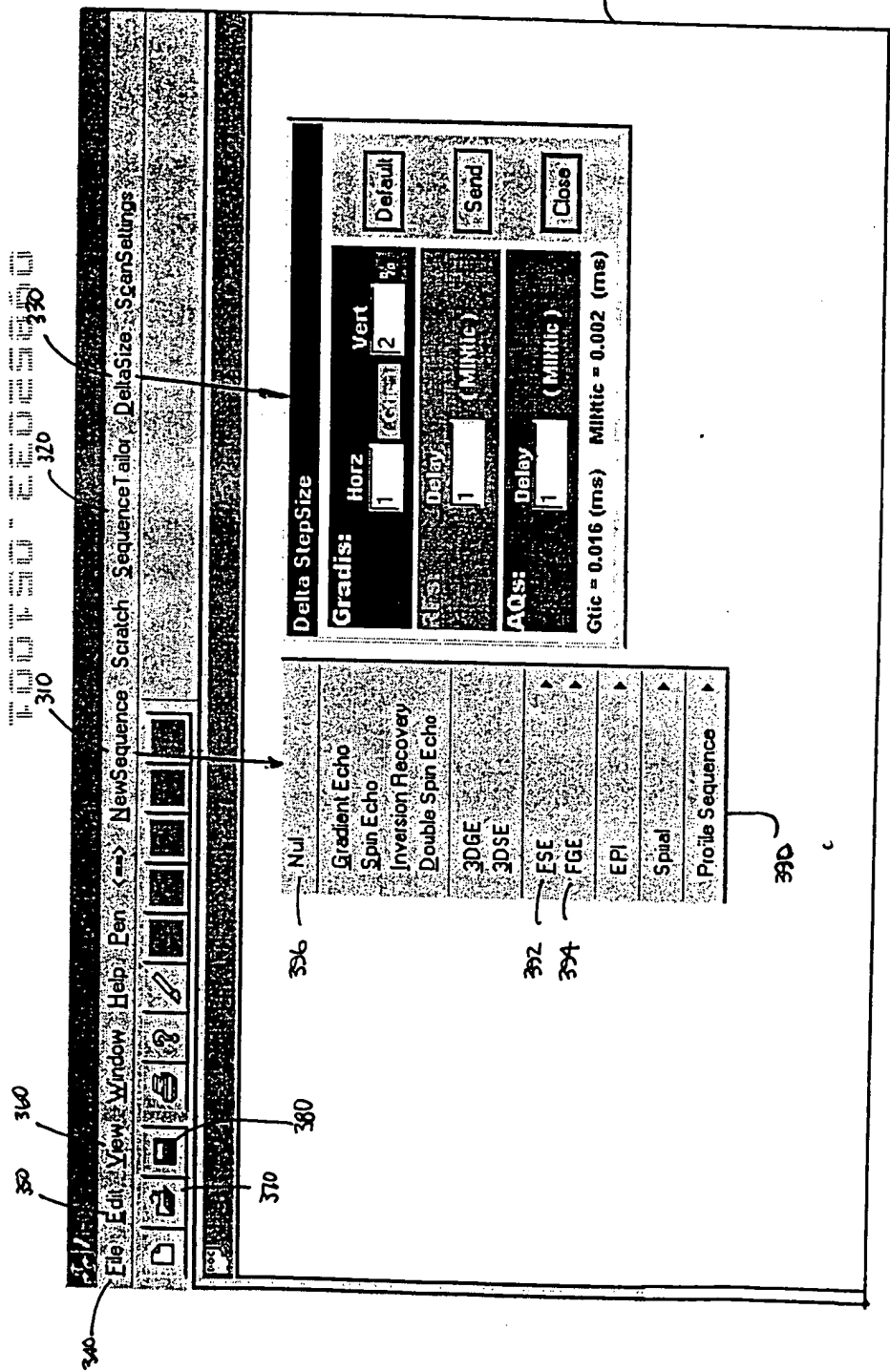


FIG. 3

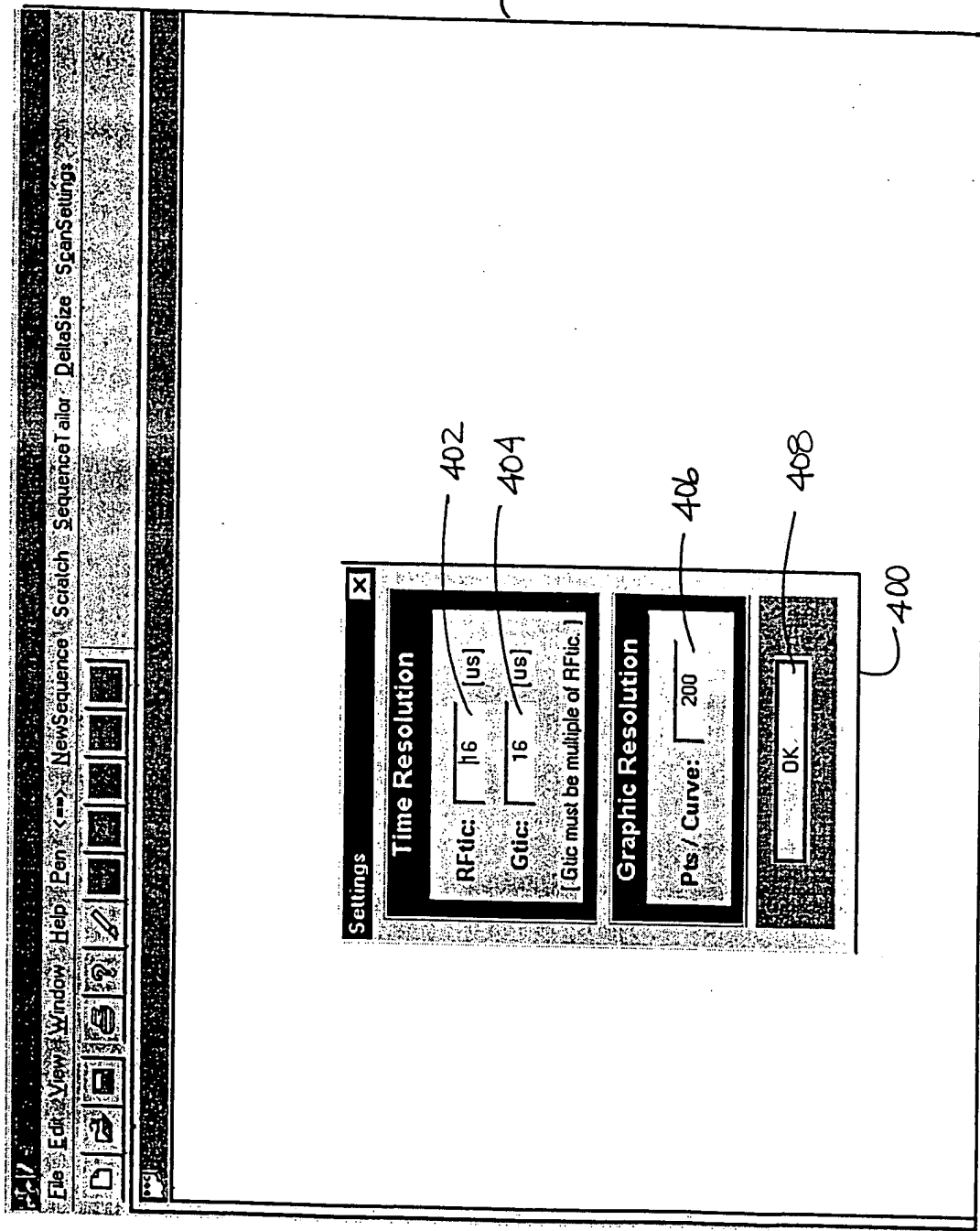


FIG. 4

File Edit View Window Help Pen NewSequence SequenceEditor DataSize ScanSettings

Sequence SE

I. Sequence Name: zse85ccip

II. TE: 85

ms

504

III. Order for Gradient Motion Compensation:

SS: 2

RO: 1

PE: 1

IV. RF:

Duration(ms): 90

Phase: 0

Shape Type: Gasico

180

5

90

Gasico

V. Data Acquisition:

Duration(ms): 20

#Samples: 1024

Echo Position Asym factor: 0.5

OK

Demo 1

Demo 2

Cancel

FIG. 5

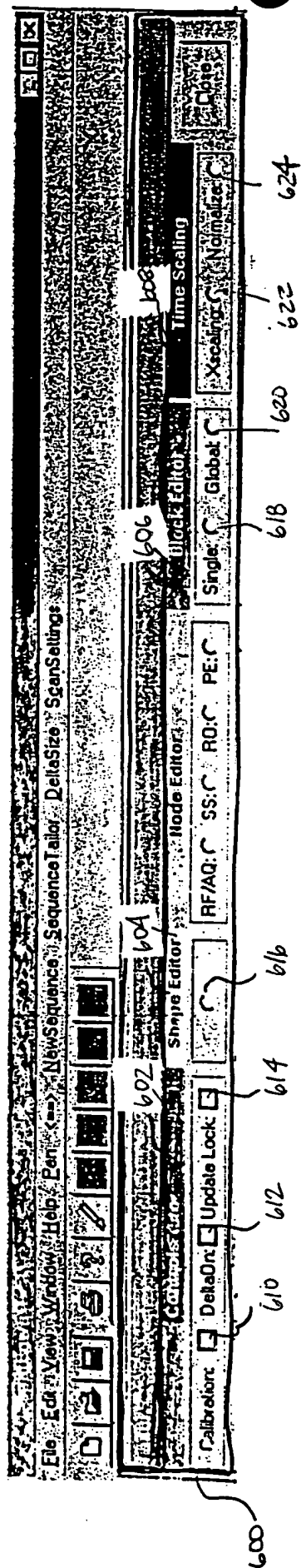
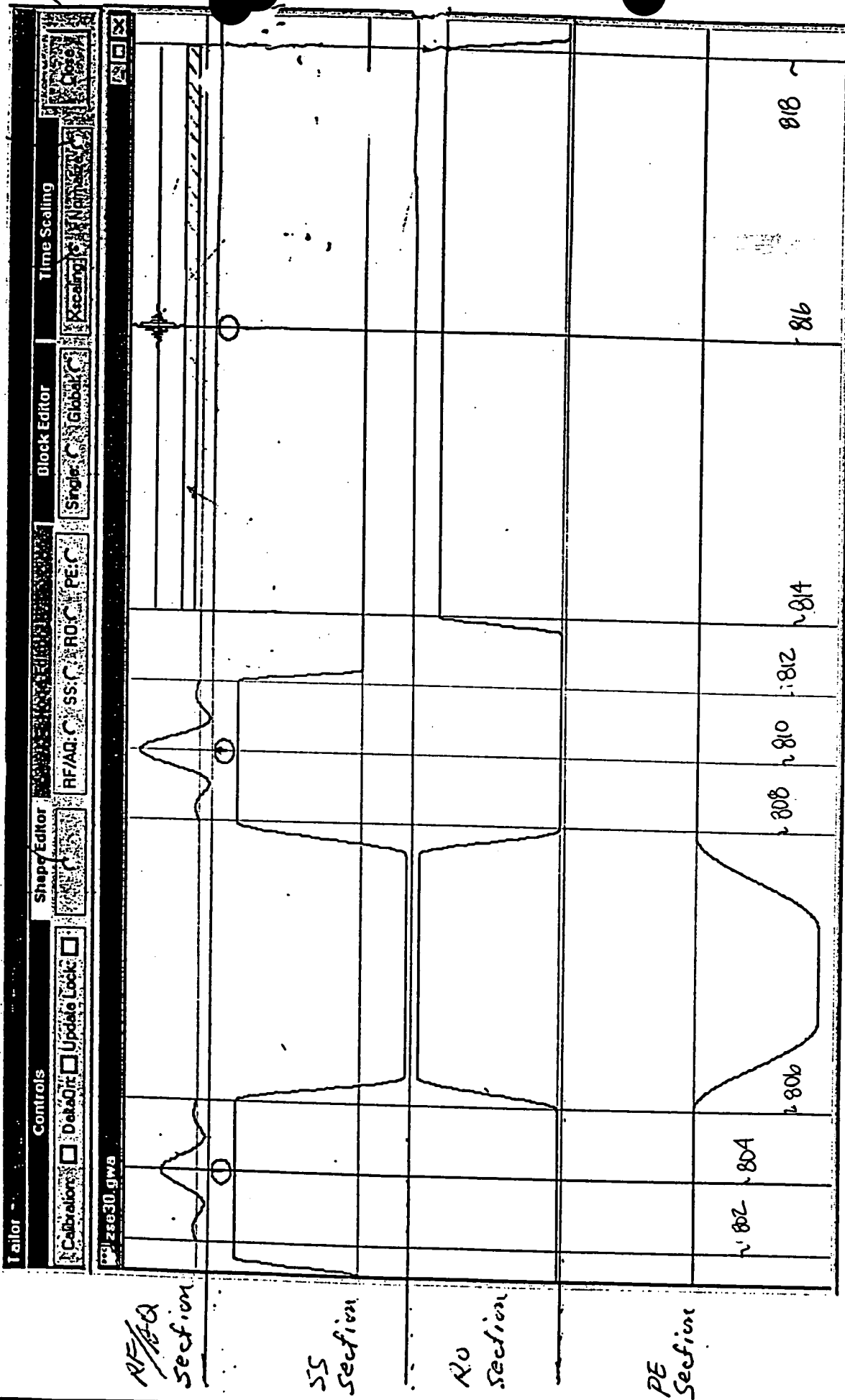


FIG. 6

✓

✓



Fi. 2

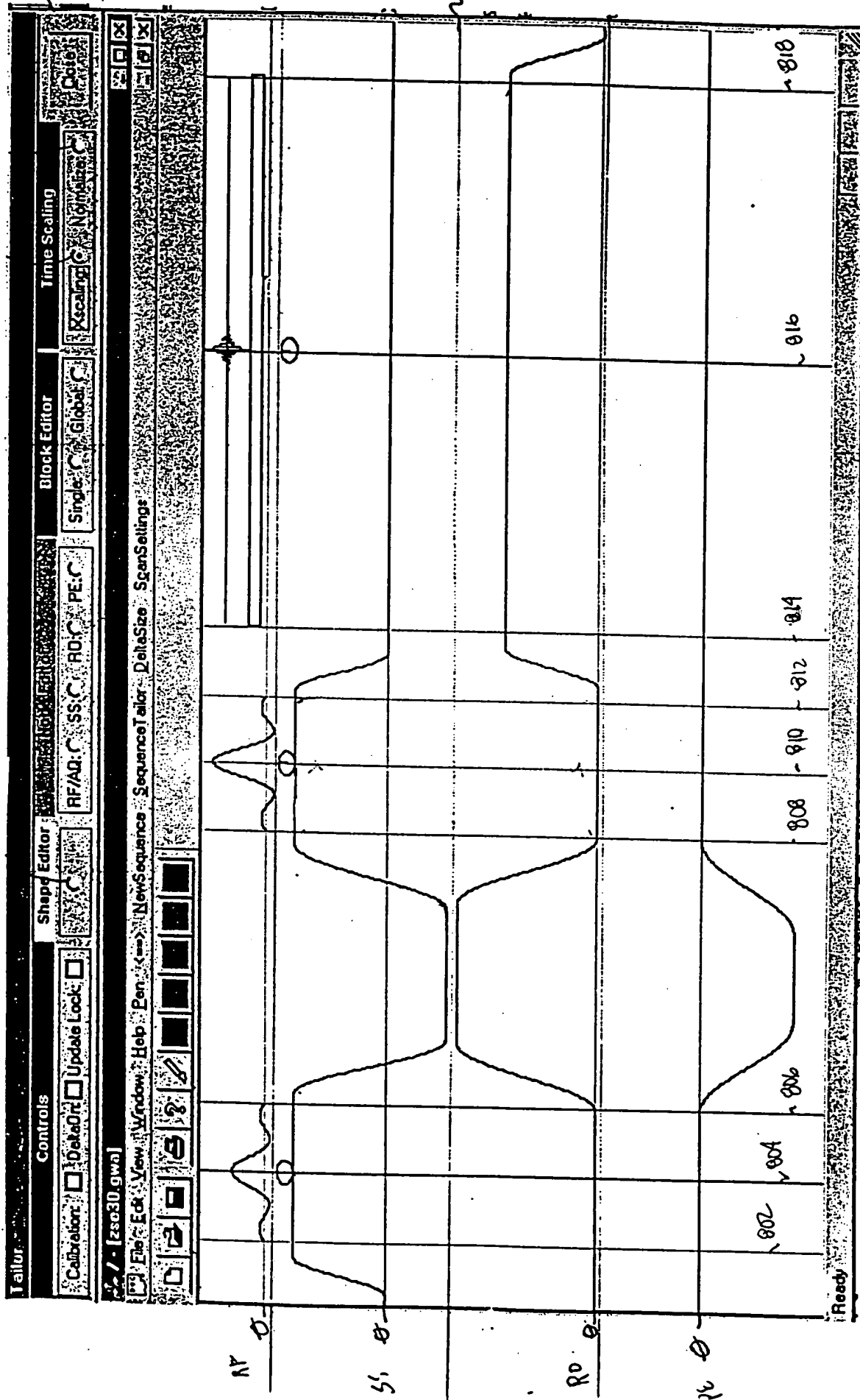


Fig. 3b

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

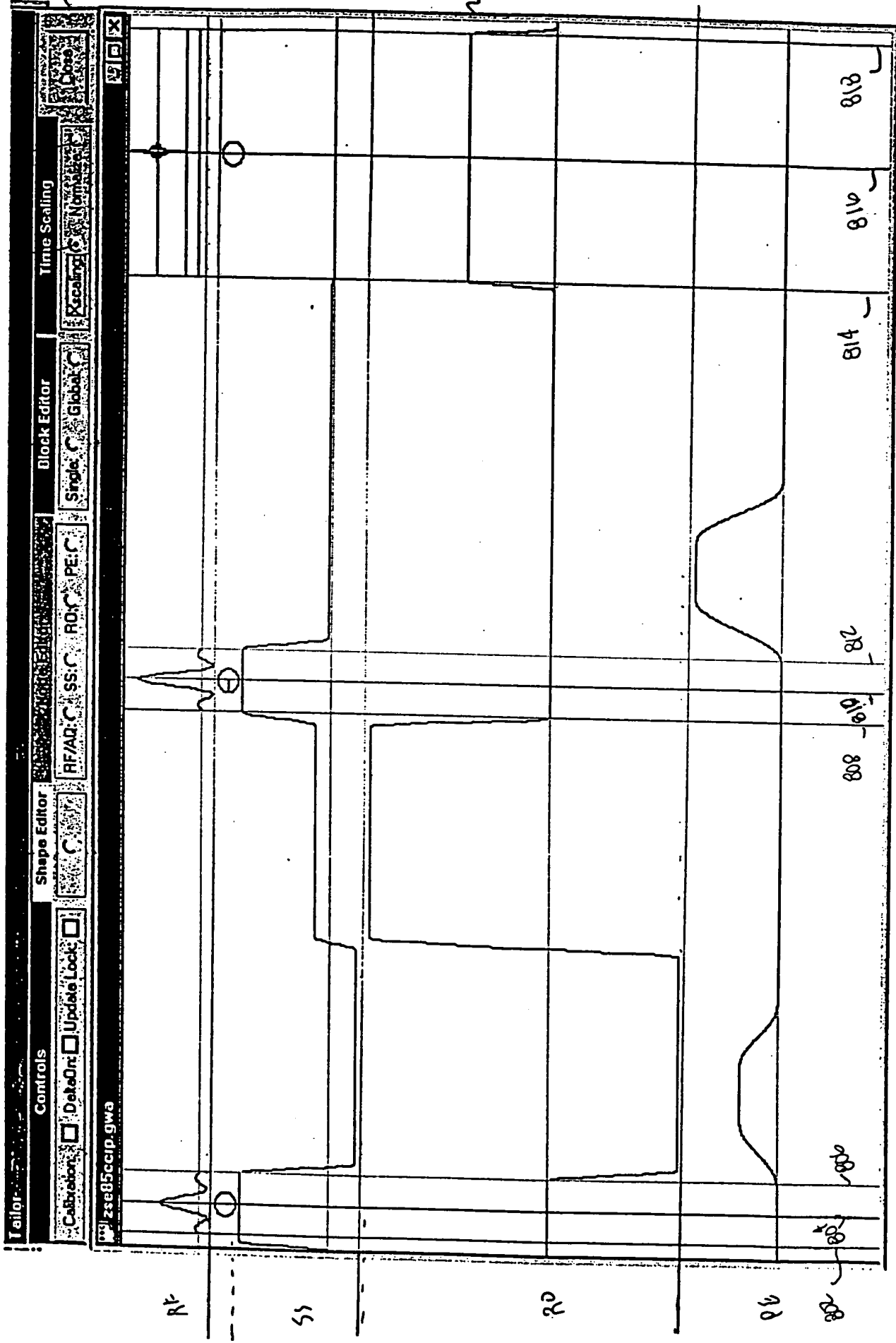


Fig-8c

TOP SECRET

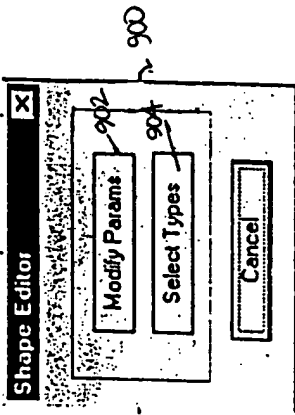


Fig. 9A

Shape Modification:

Gaseco Parameters:	
1. Amplitude of Sine:	98 912
2. Cycles of Sine:	3 914
3. Exponential of Sine:	0.4 916
4. Amplitude of Cosine:	2 918
5. Cycles of Cosine:	0 920
6. Exponential of Cosine:	0.55 922
Asymmetric factor: 0.5 924	

Cancel OK

Fig. 9B

FIG. 9C

952

Shape Selection:

Shape Types:

Hermite

OK

Cancel

950

Numerical Shapes:

Shapes Available

956

Fig. 9C

1000

zge12cr.gwa

File Edit View Window Help Pen

NewSequence Scratch SequenceTailor DeltaSize

ScanSettings

MRI Scans

2D Scan - 1022

2D - Variable TR Scan - 1022

3D - Scan - 1026

FSE 2D - Scan - 1028

FSE 3D - Scan - 1030

Multiple 2D - Scans - 1032

Multiple 3D - Scans - 1034

Combo Scan

StaticCombo

DynamicCombo

Rescale

Global: O

Editor

1020

1036

1042

1044

1056

1060

1064

1068

1072

1080

1088

1096

1104

1112

1120

1128

1136

1144

1152

1160

1168

1176

1184

1192

1200

1208

1216

1224

1232

1240

1248

1256

zge12cr.gwa

File Edit View Window Help Pen

NewSequence Scratch SequenceTailor DeltaSize

ScanSettings

MRI Scans

2D Scan - 1022

2D - Variable TR Scan - 1022

3D - Scan - 1026

FSE 2D - Scan - 1028

FSE 3D - Scan - 1030

Multiple 2D - Scans - 1032

Multiple 3D - Scans - 1034

Combo Scan

StaticCombo

DynamicCombo

Rescale

Global: O

Editor

1020

1036

1042

1044

1056

1060

1064

1068

1072

1080

1088

1096

1104

1112

1120

1128

1136

1144

1152

1160

1168

1176

1184

1192

1200

1208

1216

1224

1232

1240

1248

1256

1000

1004

1008

1012

1016

1020

1024

1028

1032

1036

1040

1044

1048

1052

1056

1060

1064

1068

1072

1076

1080

1084

1088

1092

1096

1100

1104

1108

1112

1116

1120

1124

1128

1132

1136

1140

1144

1148

1152

1156

1160

1164

1168

1172

1176

1180

1184

1188

1192

1196

1000

1004

1008

1012

1016

1020

1024

1028

1032

1036

1040

1044

1048

1052

1056

1060

1064

1068

1072

1076

1080

1084

1088

1092

1096

1100

1104

1108

1112

1116

1120

1124

1128

1132

1136

1140

1144

1148

1152

1156

1160

1164

1168

1172

1176

1180

1184

1188

1192

1196

1000

1004

1008

1012

1016

1020

1024

1028

1032

1036

1040

1044

1048

1052

1056

1060

1064

1068

1072

1076

1080

1084

1088

1092

1096

1100

1104

1108

1112

1116

1120

1124

1128

1132

1136

1140

1144

1148

1152

1156

1160

1164

1168

1172

1176

1180

1184

1188

1192

1196

1000

1004

1008

1012

1016

1020

1024

1028

1032

1036

1040

1044

1048

1052

1056

1060

1064

1068

1072

1076

1080

1084

1088

1092

1096

1100

1104

1108

1112

1116

1120

1124

1128

1132

1136

1140

1144

1148

1152

1156

1160

1164

1168

1172

1176

1180

1184

1188

1192

1196

1000

1004

1008

1012

1016

1020

1024

1028

1032

1036

1040

1044

1048

1052

1056

1060

1064

1068

1072

1076

1080

1084

1088

1092

1096

1100

1104

1108

1112

1116

1120

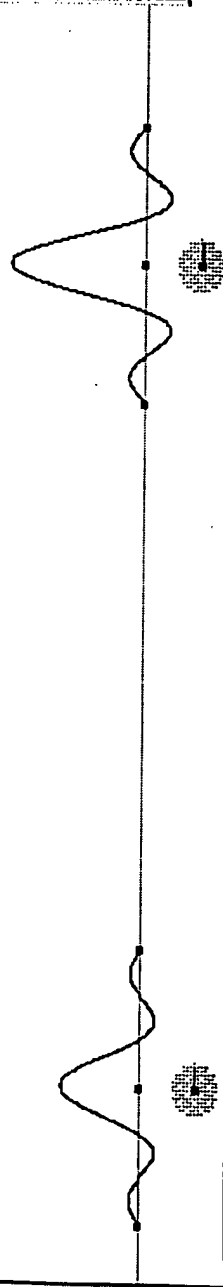
FILE EDIT VIEW WINDOW HELP PEN NewSequence Scratch SequenceTailor DeltaSize ScanSettings MRI Scans Scan a Gradient Wave Scan a Shape

zse30.gwa

File Edit View Window Help Pen NewSequence Scratch SequenceTailor DeltaSize ScanSettings MRI Scans Scan a Gradient Wave Scan a Shape



zse30.gwa



1050B

Setting Combo Imaging Parameters

Combo-Seq Name:

zge12cr-z3dge10cr

Imaging Seq:

zge12cr

TE (ms): 12

Trig Signal-Processor:

TR (ms): 24.192

Number of Levels: 256

PE DFT Size: 256

180 RF Flip: 0-42150

OK

Cancel

Imaging Seq:

z3dge10cr

TE (ms): 10

TR (ms): 20

Number of Slices: 32

Slice Thickness: 1

Number of Levels: 256

PE DFT Size: 256

180 RF Flip: 1

3D additional:

of Slabs: 1

Slab Thickness: 32

of Inner Levels: 32

Inner DFT Size: 32

Combo Scan

Static Combo

Dynamic Combo

1044

1072

1070

FIG. 10B

Setting Imaging Parameters [X]

Sequence

Sequence Name: zse85ccip

TE (ms): 84.992

Imaging Parameters

Number of Slices: 1

Slice Thickness: 7

TR (ms): 99.552

Number of Levels: 256

DFT Size: 256

180 RF Flip: 1

[OK] [Cancel]

Reference numerals: 1062, 1064, 1080, 1082, 1088, 1090, 1092, 1094, 1096

FIG. 10C

SCANNED, # 8

1000

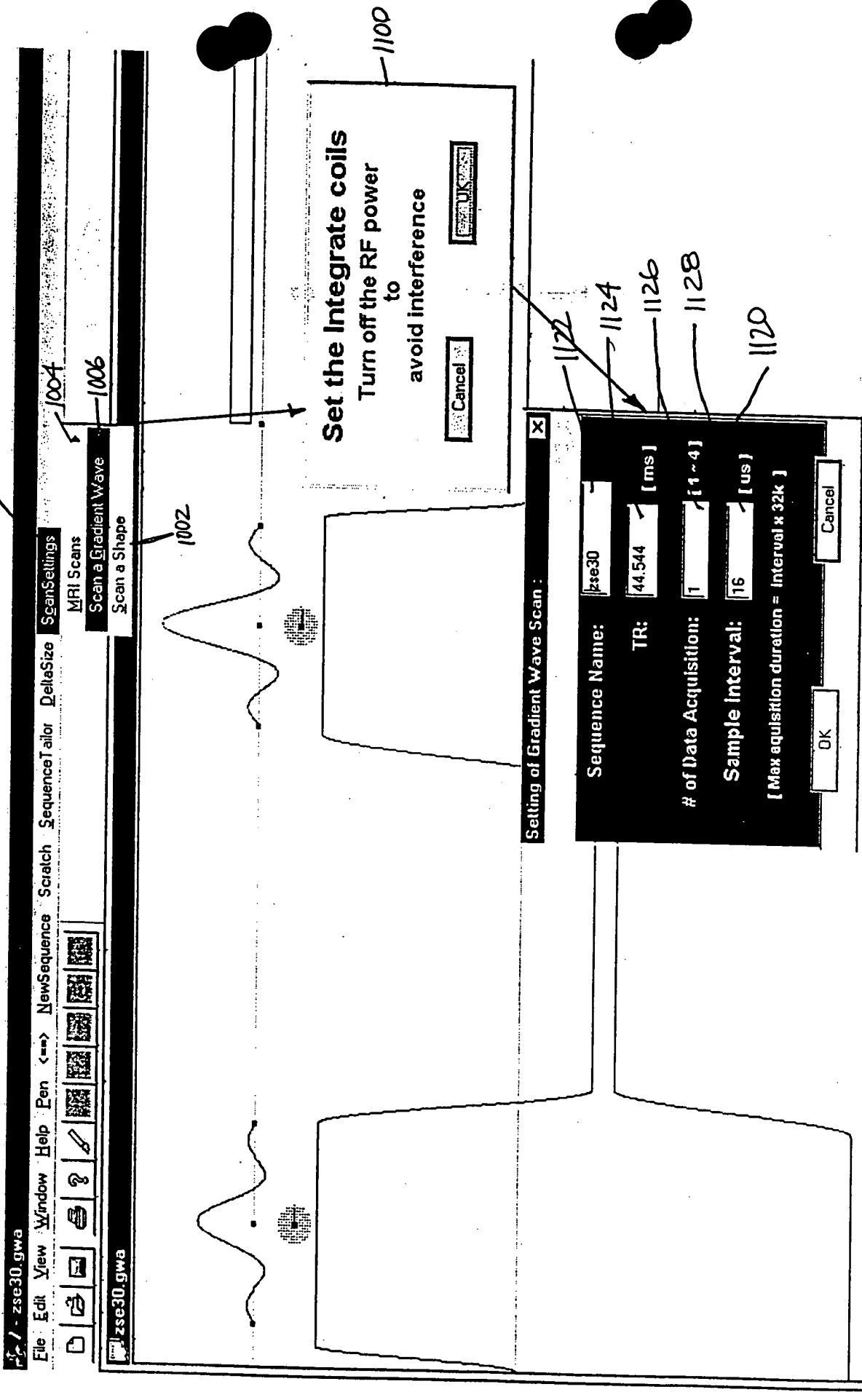


FIG. 11

File Edit View Window Help Pen <=> NewSequence Scratch SequenceTailor DeltaSize SgenSettings

zsc30.gwa

File Edit View Window Help Pen <=> NewSequence Scratch SequenceTailor DeltaSize SgenSettings



zsc30.gwa

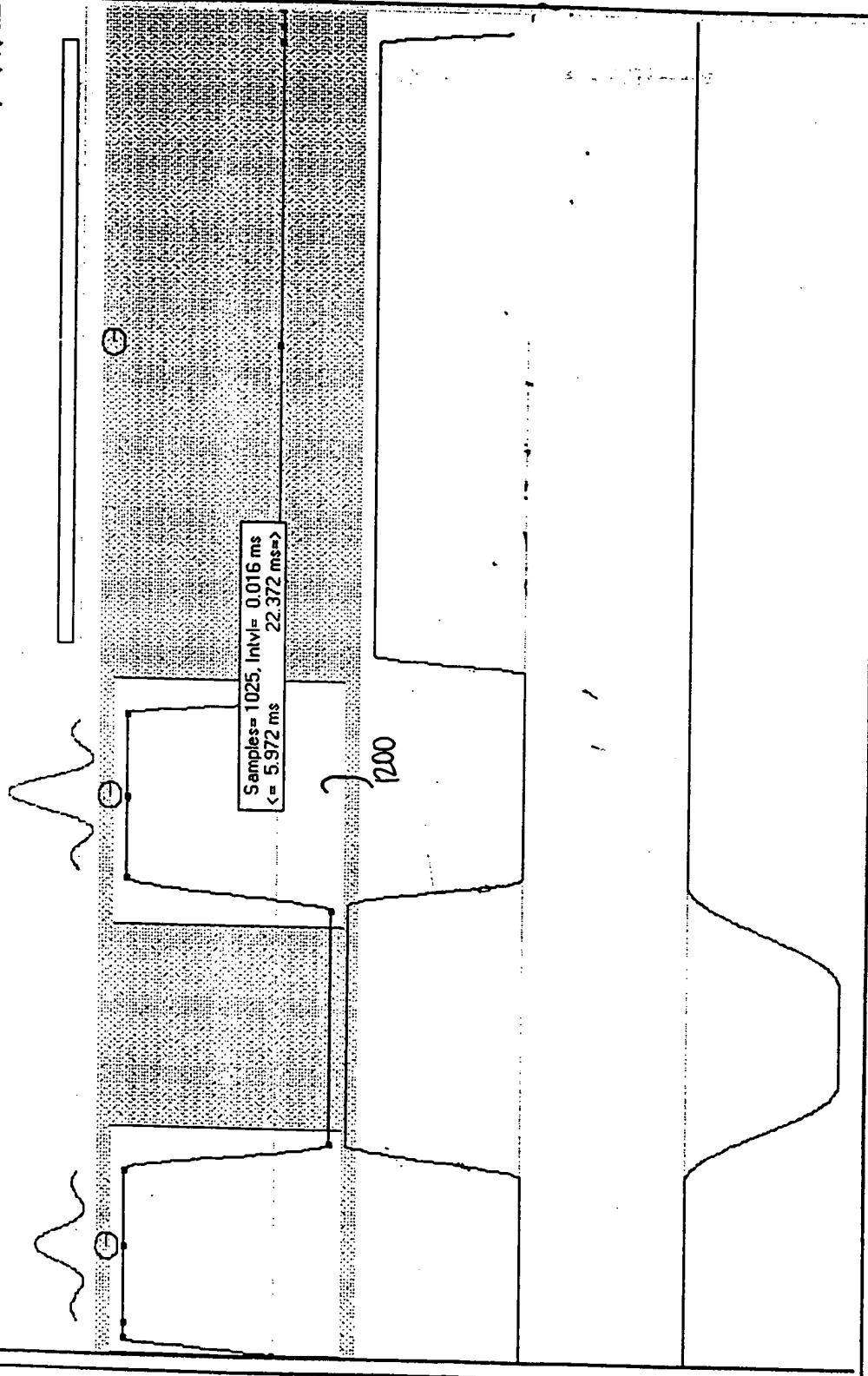
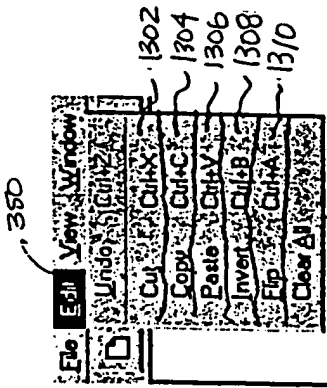


FIG. 12

FIG. 13A



1312

FIG. 13A

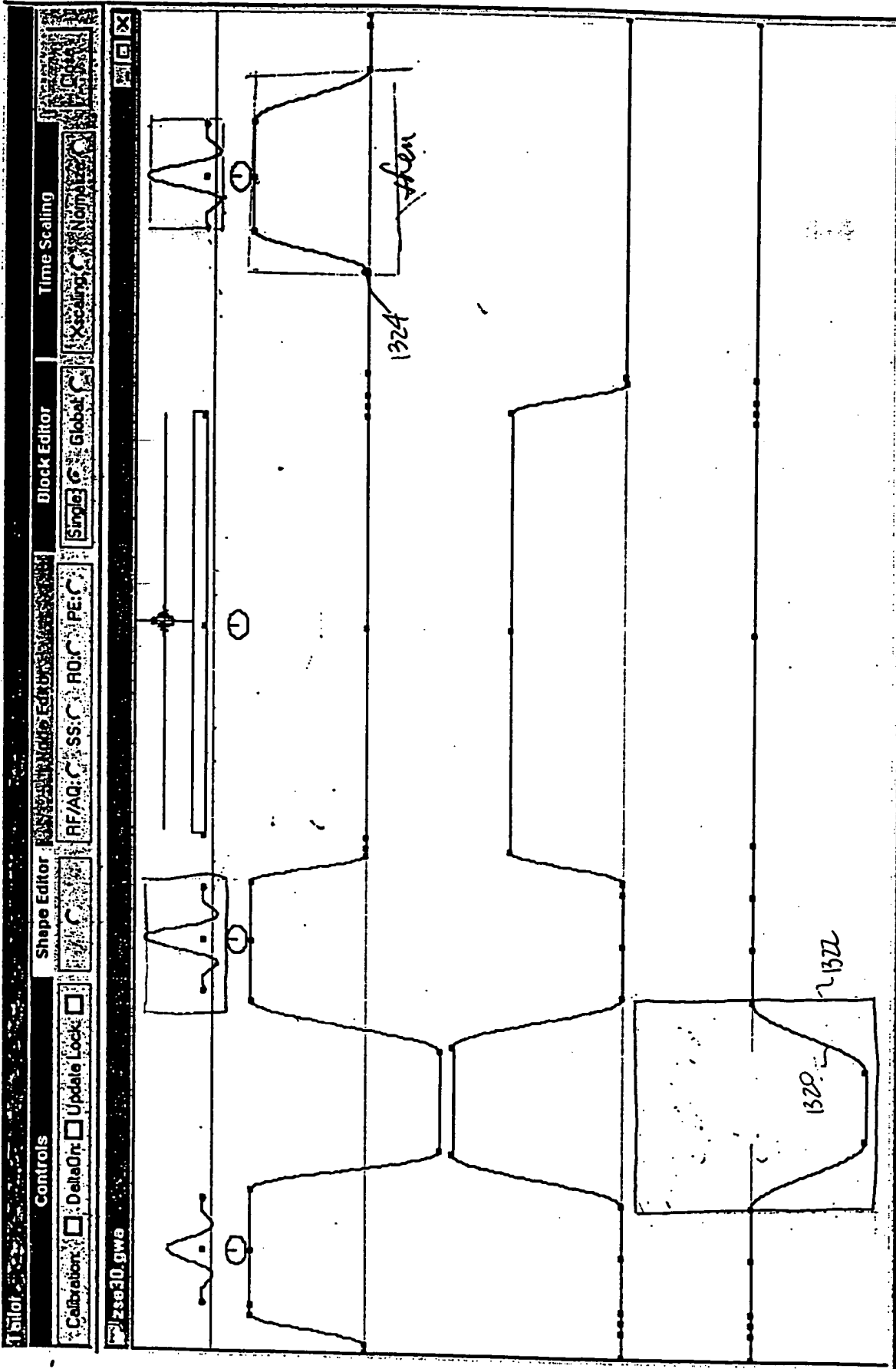


FIG. 13B

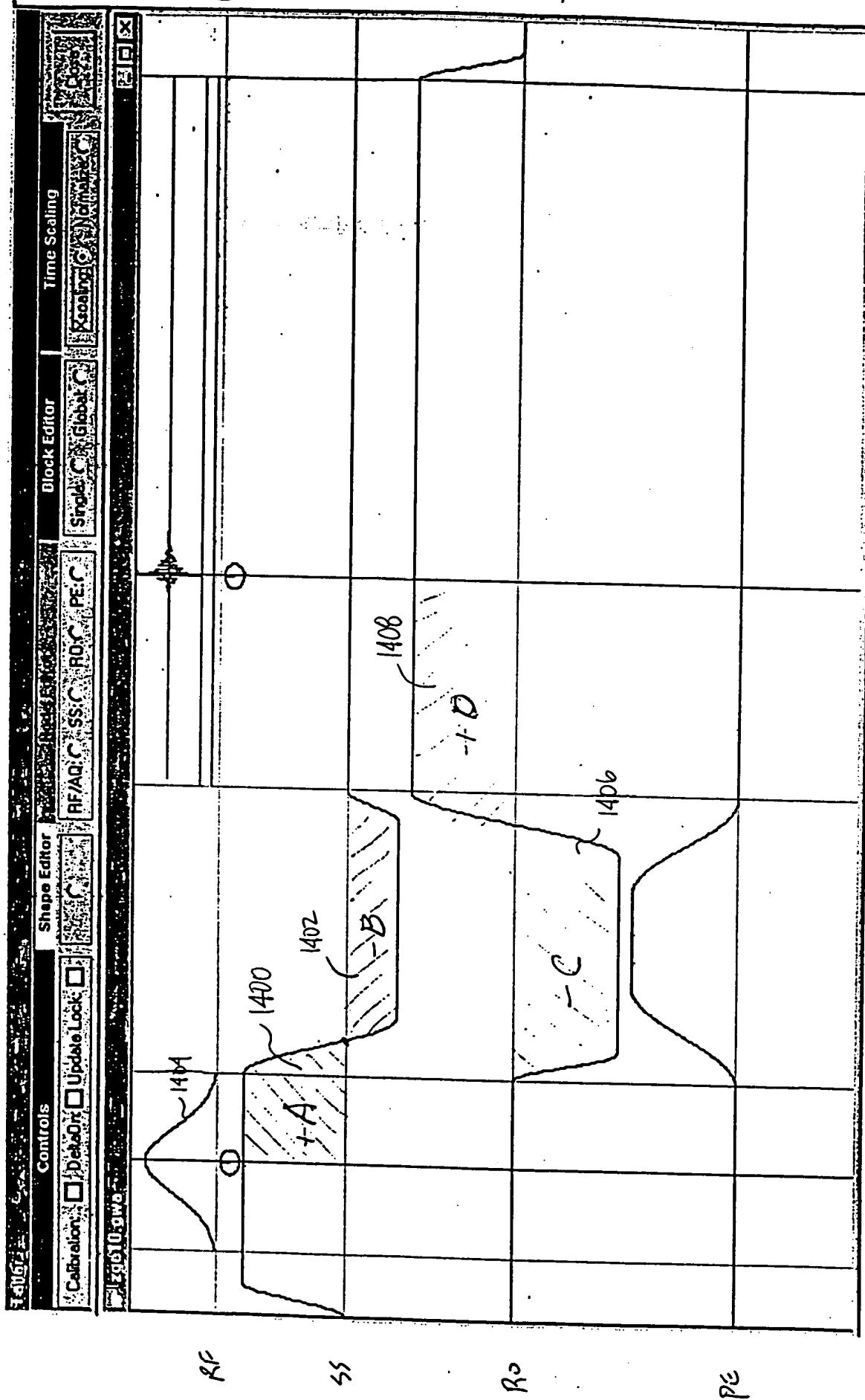


FIG. 14A

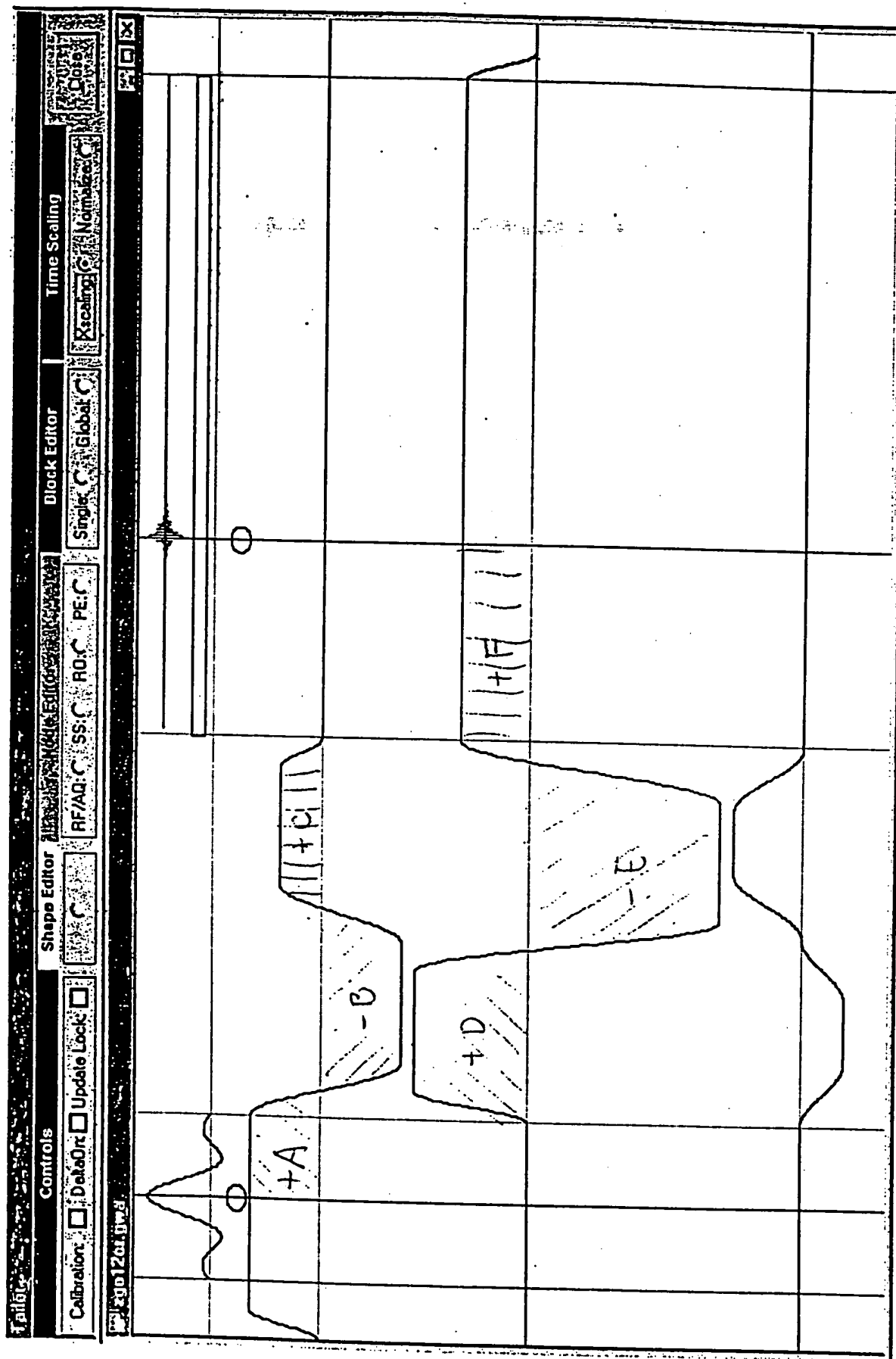


Fig. 14B

RF SS RO PE

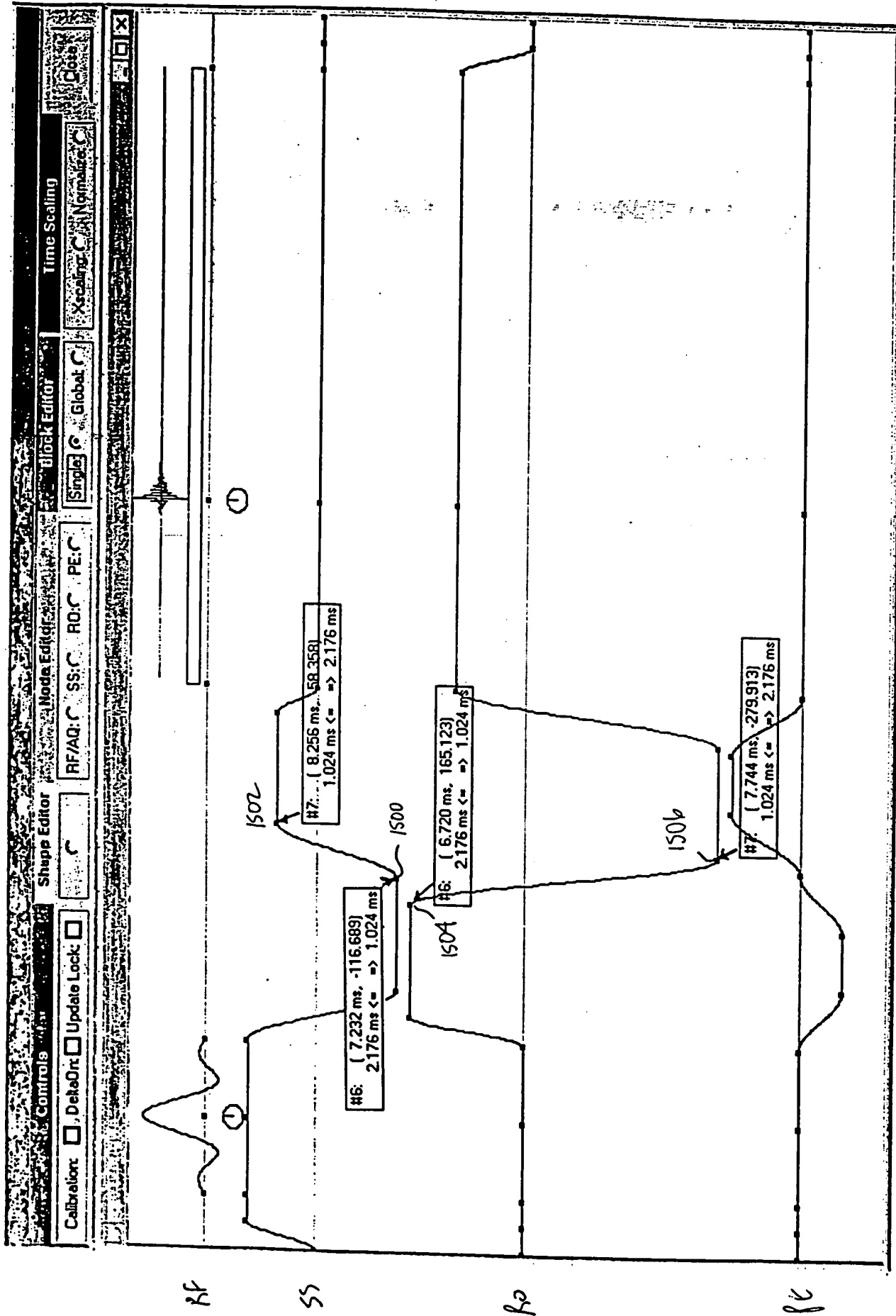


FIG. 15A :

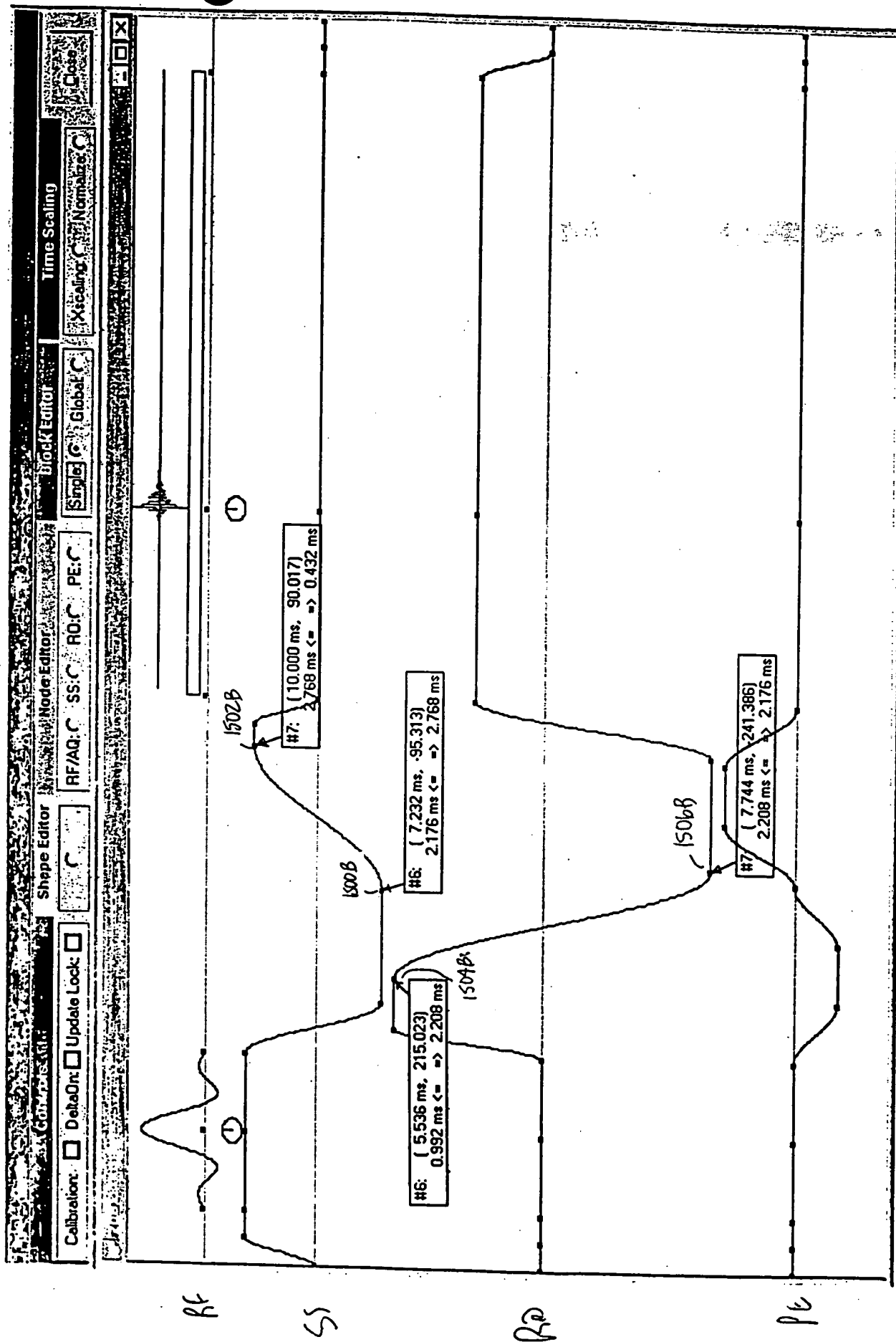


FIG. 15B.

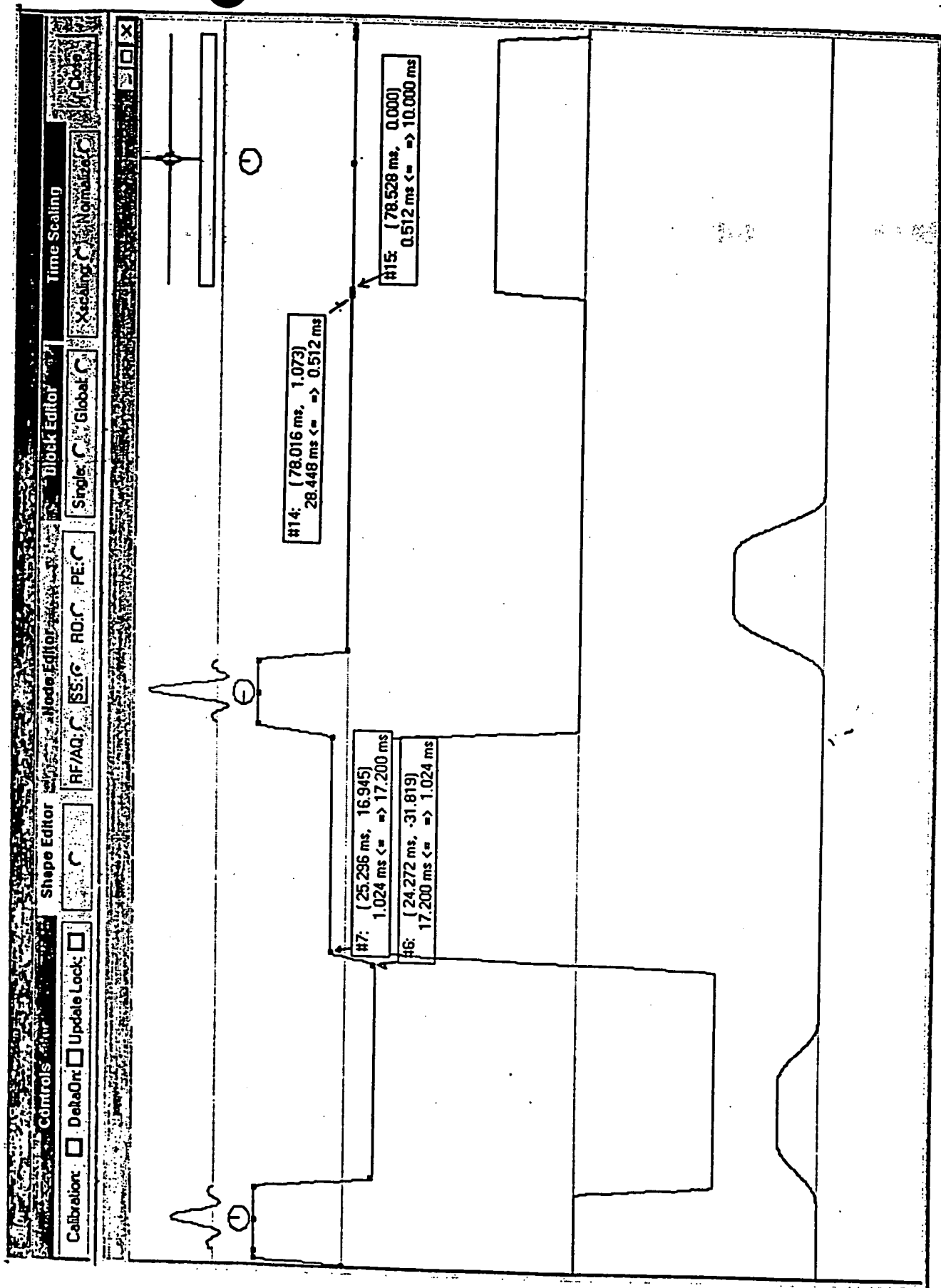


FIG. 16A

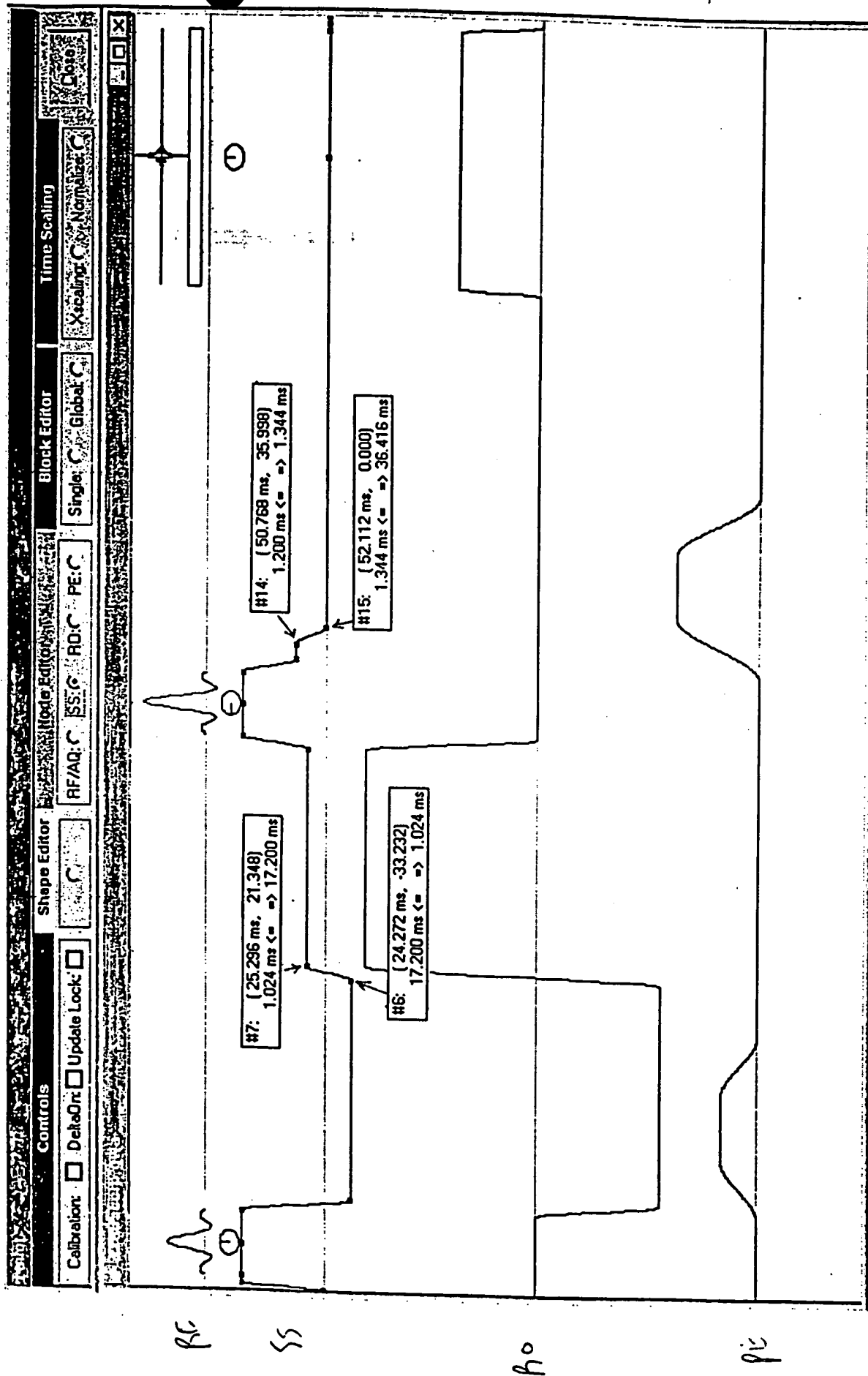


FIG. 16B

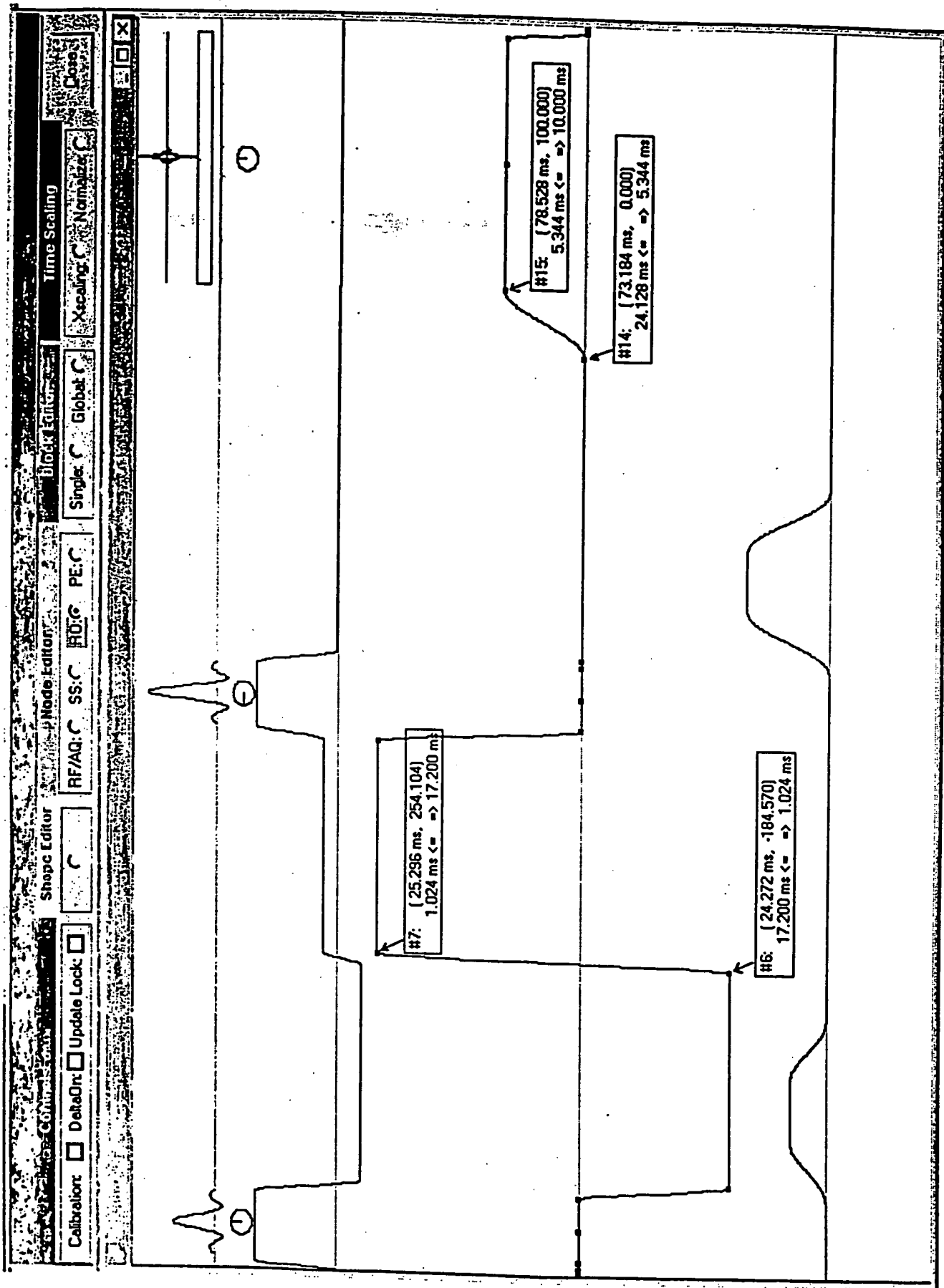


FIG. 16C

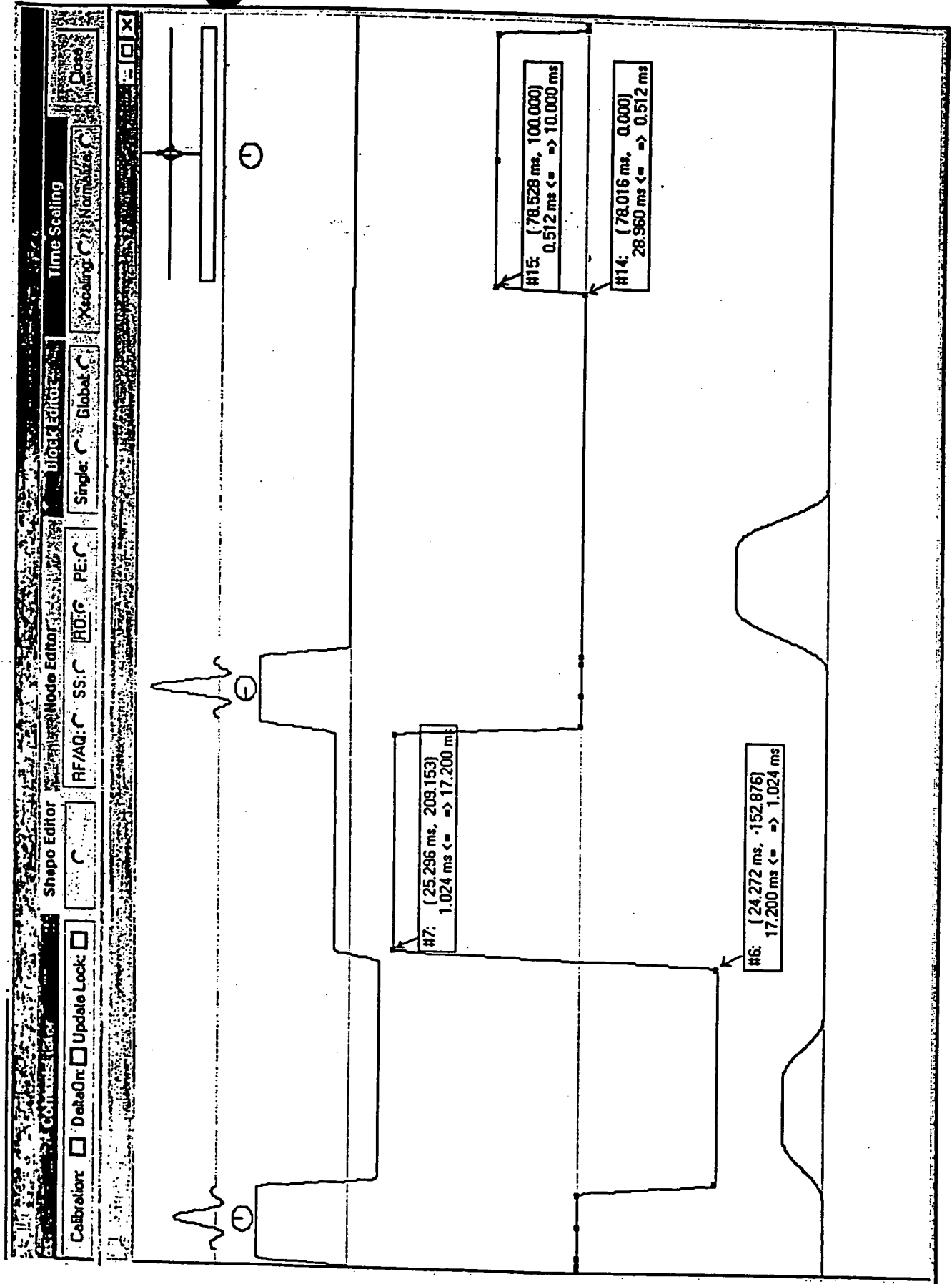


Fig. 16D

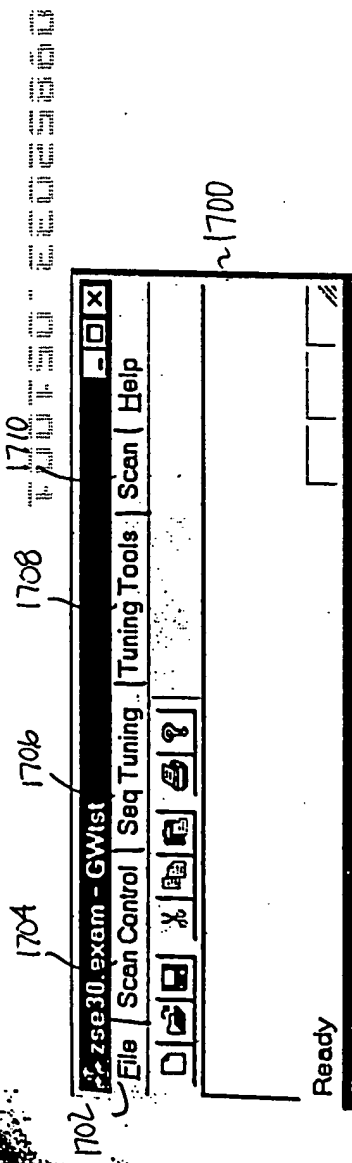


FIG. 17

Sequence Tuning Display						
<div style="margin-bottom: 10px;">Control Menu</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">Upper Window.</div> <div style="display: flex; justify-content: space-between;"> <input checked="" type="radio"/> Input <input checked="" type="radio"/> Output </div> <div style="display: flex; justify-content: space-between;"> <input checked="" type="radio"/> Real <input checked="" type="radio"/> Ampl </div> <div style="display: flex; justify-content: space-between;"> <input checked="" type="radio"/> Imag <input checked="" type="radio"/> Phase </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">Lower Window.</div> <div style="display: flex; justify-content: space-between;"> <input checked="" type="radio"/> Input <input checked="" type="radio"/> Output </div> <div style="display: flex; justify-content: space-between;"> <input checked="" type="radio"/> Real <input checked="" type="radio"/> Ampl </div> <div style="display: flex; justify-content: space-between;"> <input checked="" type="radio"/> Imag <input checked="" type="radio"/> Phase </div> <div style="display: flex; justify-content: space-between;"> <input checked="" type="radio"/> Waveform </div>	<div style="margin-bottom: 10px;">Control Mode:</div> <div style="display: flex; justify-content: space-between;"> <div>SS <input type="text" value="1"/></div> <div><input checked="" type="radio"/> Joint Plot</div> </div> <div style="display: flex; justify-content: space-between;"> <div>RO <input type="text" value="1"/></div> <div><input type="checkbox"/> Zoom</div> </div> <div style="display: flex; justify-content: space-between;"> <div>PE <input type="text" value="1"/></div> <div><input type="checkbox"/> Auto Tun</div> </div> <div style="display: flex; justify-content: space-between;"> <div>TR <input type="text" value="0"/></div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>Out PE <input type="text" value="0"/></div> <div><input type="button" value="Save"/></div> </div> <div style="display: flex; justify-content: space-between;"> <div>In PE <input type="text" value="0"/></div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>Loop PE <input type="text" value="0"/></div> <div><input type="button" value="Send"/></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">Slice Plane: AXI-A/P ▾</div>	<div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div>IN: <input type="text" value="0"/></div> <div>OUT: <input type="text" value="0"/></div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div>Echo No.: <input type="text" value="0"/></div> <div><input type="button" value="÷"/></div> <div><input type="button" value="Go"/></div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div>Skip Data: <input type="text" value="5"/></div> <div><input type="button" value="Go"/></div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div>Save Rows <input type="text" value="0"/></div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div><input type="button" value="Pause"/></div> <div><input type="button" value="Cont"/></div> </div> <div style="display: flex; justify-content: space-between;"> <div><input type="button" value="Close"/></div> </div>	<div style="text-align: center; font-size: 2em; margin-top: 50px;">upper frame 1 Frame 1802</div>	<div style="text-align: center; font-size: 2em; margin-top: 50px;">lower frame 2 Frame 1804</div>	<div style="text-align: center; font-size: 2em; margin-top: 50px;">upper frame 1 Frame 1802</div>	<div style="text-align: center; font-size: 2em; margin-top: 50px;">lower frame 2 Frame 1804</div>

FIG. 18A

1802

Sequence Tuning Display

Control Menu

Upper Window:

- ☐ Input
- ☒ Output
- ☐ Real
- ☒ Ampl
- ☐ Imag
- ☐ Phase

Lower Window:

- ☐ Input
- ☒ Output
- ☐ Real
- ☒ Ampl
- ☐ Imag
- ☒ Phase
- ☐ Waveform

Control Mode:

- SS ☐ Joint Plot
- RO ☐ Zoom
- PE ☐ Auto Tun
- TR ☐ 0

Out PE ☐ Save

In PE ☐ Send

Loop PE ☐ Send

Slice Plane: AXI-A/P

IN: 0 OUT: 0

Echo No.: 0 Go

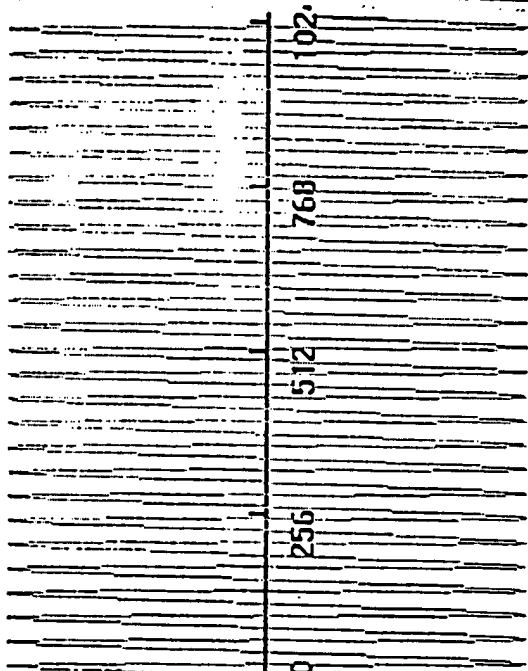
Skip Data: 5 Go

Save Raws 0

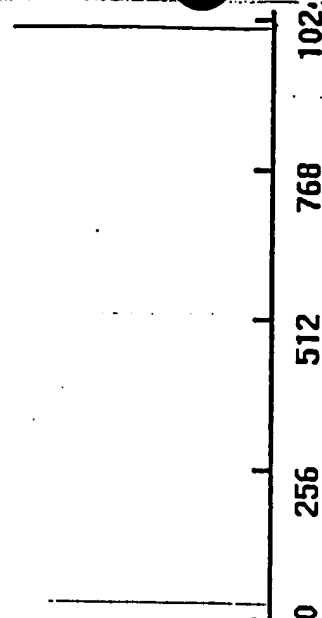
Pause Con't

Close

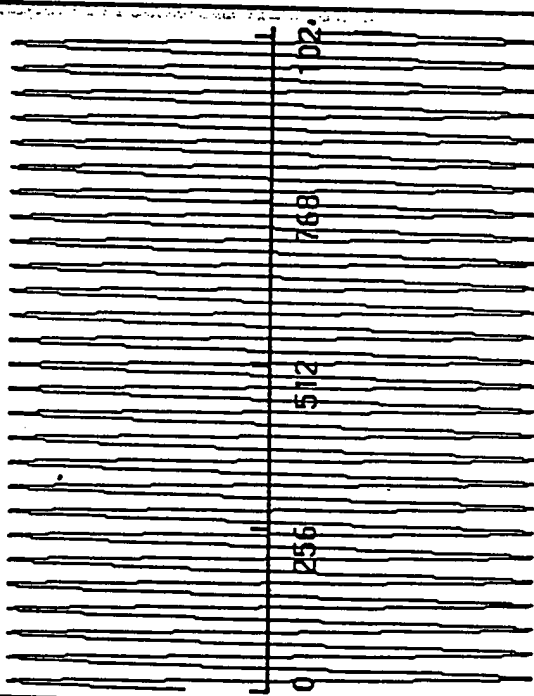
Real (99.00, -99.00) - 8



Ampl(77592.43, 10.75), Width(27 28 > 1)



Imag (99.00, -99.00) - 7



Phase (179.81, -179.70)



1806

FIG. 18B

1007507 200300

Scan Params ☒

Exam :: H:\Fonar\Exams\zse30.exam

TE: 30 ~ 1902

Slices: 1 ~ 1904

TR: 46 ~ 1906

NEX: 1 ~ 1908

Levels: 128 ~ 1910

ETL: 0 ~ 1912, 1914

Slice Plane: AXI-AP ☒

1916

Scan Time: 5888 MSec.

Imag::

1900

FIG. 19